Expeditionary Maneuver Warfare & Combating Terrorism S&T Department
Code 30
DEVELOPING FUTURE NAVAL COMBAT CAPABILITIES
USMC
USN
SMALL UNIT EXCELLENCE
LETHALITY, SUSTAINMENT, HUMAN PERFORMANCE, AND COMBAT LOAD REDUCTION TECHNOLOGIES FOR NAVAL WARRIORS
MARITIME IRREGULAR WARFARE
NAVAL EXPEDITIONARY COMBAT TECHNOLOGIES FOR COMBATING TERRORISM AND DEFENDING THE HOMELAND
COMBAT TACTICAL VEHICLES
ADVANCED MOBILITY AND ARMOR TECHNOLOGIES FOR ENHANCED MANEUVER AND SURVIVABILITY
DISTRIBUTED OPERATIONS
INTELLIGENCE, SURVEILLANCE, AND C2 TECHNOLOGIES FOR LITTORAL DOMAIN AWARENESS
TIME-TO-ACTION
ONR
OFFICE OF NAVAL RESEARCH

George W. Solhan

Department Head

Expeditionary Maneuver Warfare and

Combating Terrorism S&T Department (ONR 30)

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NATIONAL DEFENSE INDUSTRIAL ASSOCIATION
STRENGTH THROUGH INDUSTRY & TECHNOLOGY

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ONR 30 Mission: Expeditionary Maneuver Warfare and Combating Terrorism

Office of Naval Research *(Public Law 588, 1946)*:
*"… **plan, foster, and encourage scientific research** in recognition of its paramount importance as related to the maintenance of **future naval power**, and the **preservation of national security**…. "*

Expeditionary Maneuver Warfare and Combating Terrorism (Code 30)
*To lead the Department of the Navy's Science and Technology efforts that develop future **combat capabilities for Naval Expeditionary Maneuver Warfare and the Department's role in Combating Terrorism**:*

*…the exploitation and subsequent application of Science and Technology in order to enhance the ability of the **Navy-Marine Corps team to achieve assured access and conduct decisive operations as the naval portion of a joi***

Investment Thrust Areas:

- **C4**
- **Fires**
- **Force Protection**
- **Human Performance**
- **Operational Adaptation**
- **Logistics**
- **Manuever**
- **Mine Countermeasures**
- **Maritime Irregular Warfare**

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Expeditionary Maneuver Warfare & Combating Terrorism Department (Code 30)

Department Head

Director Programming, Planning, & Operations

USMC FNC/Pillar Integration

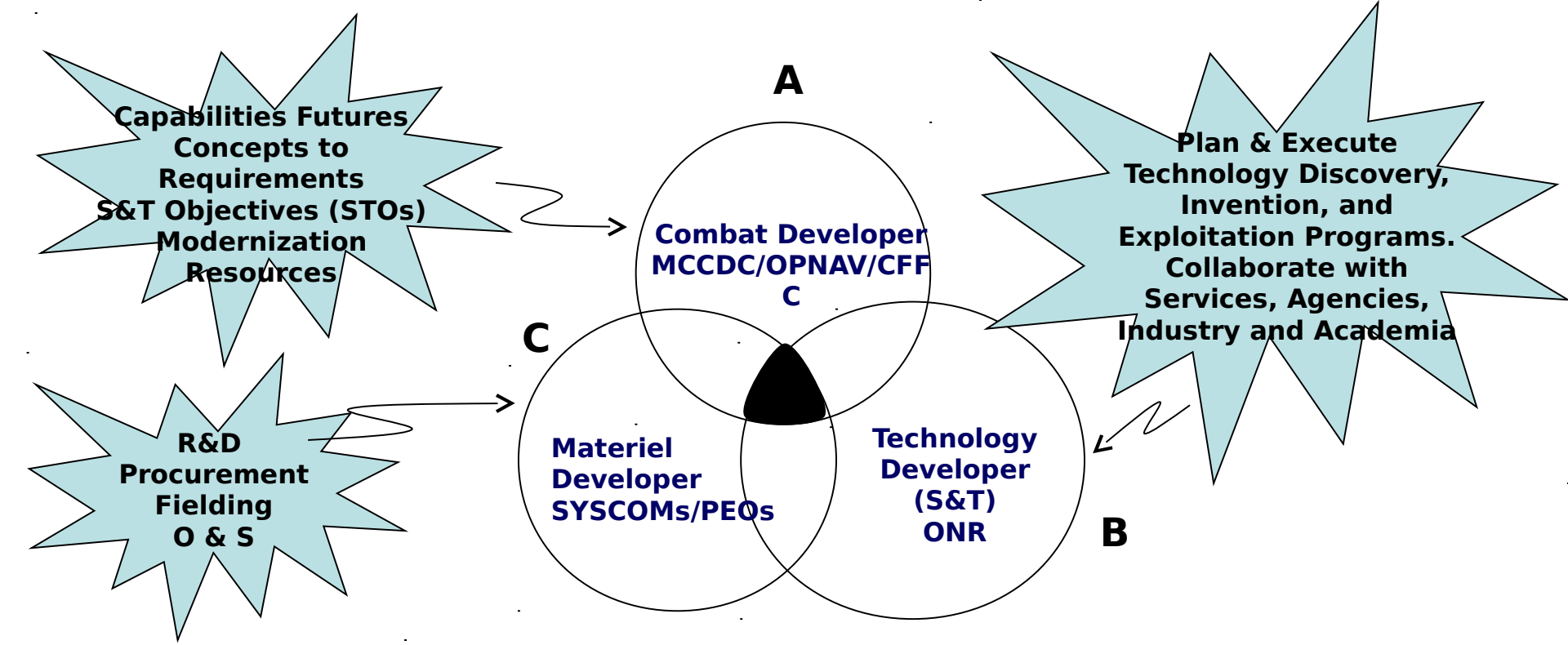
Deputy Department Head

Research Division (301)
Director
Basic Researh

Applications Division (302)
Director
Deputy

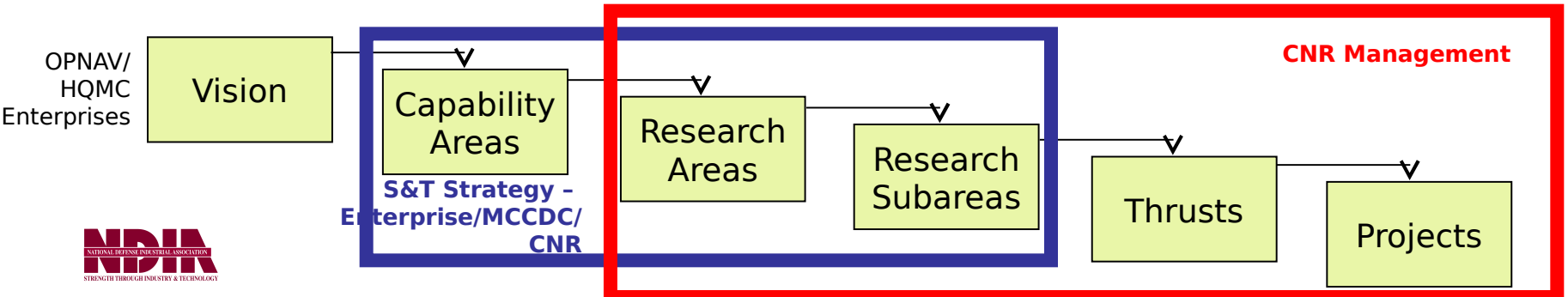
Combating Terrorism & Integration Division (303)
Director
Integration

- Human Performance Training & Education
- **C4**
- **ISR**
- **Fires**
- **Logistics**
- **Maneuver**
- **Force Protection (MCM/CIED/ CRAM/etc)**
- **Maritime Irregular Warfare** (MSO/MIA/MDA)
- **Operational Adaptation**



A	Concept →	Capability Futures →	Gaps →	Requirements		
B		Capability Futures →	Gaps →	Requirements →	Technology	
C				Requirements →	Technology →	R&D/ Production

Capability



S&T Requirements Process "Top Down"

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A NATIONAL SECURITY STRATEGY OF ENGAGEMENT AND ENLARGEMENT
National Military Strategy
Joint Vision 2020
Expeditionary Maneuver Warfare
Marine Corps Strategy 21

Expeditionary Maneuver Warfare Capabilities List (ECL)

S&T Strategic Plan

S&T Investment Plan

Multi-Year S&T Program

Science & Technology Objectives (STO's)

STO – states a major technological advancement to be achieved and is in support of a capability need identified and prioritized during S&T gap analysis

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ExWar & Combating Terrorism

Most Contested

–

Least Invested

Symmetric Asymmetric

MCO Strike SASO Hum.

Maritime Domain

Air Space

Sea Land

Desert Jungle

Mtn. Urban / Littoral

Port /Waterfront Industrial

City Suburb

Urban Littoral Area

CbT Taxonomy Evolution

Strategic Guidance

National Security Strategy (2002)

- National Defense Strategy (2005)
- National Strategy For Combating Terrorism (2003)
- National Strategy For Maritime Security (2005)
- National Strategy For Homeland Security (2002)
- Quadrennial Defense Review (2006)

Navy Strategic Plan

Marine Corps Science & Technology Strategic Plan

ONR CbT Capability Areas

- ***Global Maritime Domain Awareness***
- ***Operational Adaptation***
- ***Maritime Irregular Warfare***

External Coordination

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Capabilities-based CbT S&T Taxonomy

Capability Areas		
Global Maritime Domain Awareness	**Maritime Irregular Warfare**	**Operational Adaptation**
Capability Gaps		
•Maritime Domain Awareness (MDA) •Littoral Domain Awareness (NECC)	•"Naval Expeditionary Combat" (NECC) •Riverine warfare (green/brown water) (NECC) •Distributed Operations (DO) •Maritime Interdiction Operations (MIO) - VBSS •Counterterrorism (CT) •Antiterrorism (AT) •Urban warfare •Foreign military training (NECC, NAVSPECWARGRU, MARSOC)	•Fused intelligence and operations to speed action •Language & cultural awareness •Command and control to plan and conduct complex interagency integration operations •Identifying irregular threat entities (insurgents/ terrorist) •Mission adaptable human performance training •Effects Based Operations (EBO)
Enabling Capabilities/ Thrust Areas		
•Maritime Domain Awareness Queuing •Multi-intel data fusion/management •Persistent, pervasive, affordable surveillance •Tag, track & locate (TTL) across the naval domain •Operational forensics	•Match engagement capability to extended senses •Real-time exploitation of information •Enhanced mounted and dismounted mobility •Extend human senses (day/night/All WX) by 10 K •On-demand precision logistics •Non-lethal, temporary vessel stopping •Reconnaissance, over watch & containment for Visit, Board, Search & Seizure (VBSS) •Counter Improvised Explosive Device (IED)/Mine Counter Measures (MCM) •Small scale sea base/riverine base	•Portable, remote, passive & standoff biometrics •Predictive cultural and psychological models •Actionable intelligence at the lowest tactical level •Information operations –PsyOps •Shape battlespace •Translation & Interpretation Aids •Predictive Analysis •Effects Assessment •Modeling, Simulations, & Wargaming

USMC Basic Research Focus Program

Initiated with Navy 6.1 funds in FY00 to provide USMC S&T Program with a Basic Research component to:

- Strengthen USMC benefit from Nation's research infrastructure
- Enable USMC to go beyond "technology harvesting" by encouraging its own scientific discovery and invention
- Anticipate the future needs of Expeditionary/Counterterrorism operations in specific focus areas:

  - Communications
  - Information Efficiency
  - Lightweight Power Source
  - Materials for Forensic Sens
  - Human Sensory Enhanceme
  - Landmine Detection
  - Energetic Materials

Examples of Texture Based Segmen

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MANEUVER

Develop, demonstrate, and transition technologies that will increase the warfighting capabilities and effectiveness of the Marine Corps Air Ground Task Force (MAGTF). This Thrust will capture emerging and "leap ahead" technologies in the areas of mobility, materials, propulsion, survivability, and unmanned systems.

ONR

MANAGER

Mr Jeff Bradel
703.588.2552
bradelj@onr.navy.mil

TEAM

Mr. Mike Byerly (D&I)
301.227.4221
Michael.Byerly@navy.mil

RECENT TRANSITIONS

GLADIATOR TACTICAL GROUND UNMANNED VEHICLE (FNC)
Transitioned to MCSC

RECONNAISSANCE, SURVEILLANCE, & TARGETING VEHICLE (FNC)
Transitioned to MCSC

MODELING & SIMULATION BASED DESIGN (D&I)
Transitioned to MCCDC

SHOCK MITIGATED SEAT - PHASE I (D&I)
Transitioned Phase I to MCSC

FOCUS AREA	PROJECT
SURVIVABILITY **MVR STO-1**: Advanced power plants, drive trains, and suspensions **MVR STO-2**: Advanced and composite materials to enhance the performance and survivability of combat vehicles **FP STO-**3: Incorporation of improved materials for future vehicles and aircraft that provide improved levels of protection at reduced weight and volume **FP STO-4**: Active protection system for vehicles against rocket propelled grenades.	SURVIVABILITY SYSTEMS MATERIALS (D&I) SHOCK MITIGATED SEAT - PHASE II (D&I) ELECTROMAGNETIC NON-EXPLOSIVE ARMOR (D&I) COMBAT S&T WHOLE SYSTEM TRADE STUDY (D&I) ADVANCED ELECTROMAGNETIC ARMOR (D&I) ACTIVE RPG DEFENSE (FNC) ULTRA ARMORED PATROL VEHICLE (D&I) ULTRA APV SURVIVABILITY ENHANCEMENTS (Plus-Up) EXPLOSION RESISTANT COATING ACTD (D&I)
UNMANNED SYSTEMS **MVR STO-6**: Advanced robotic systems for ground combat	GUNSLINGER HOSTILE FIRE DETECTION (FNC)
ADVANCED MOBILITY **MVR STO-1** **MVR STO-2** **MVR STO-3**: Augmented cognition for combat vehicle crews and operators of maneuver systems	COGNITIVE ASSESSMENT & TASK MANAGEMENT (D&I) EXPEDITIONARY DECISION SUPPORT SYSTEM (FNC) COMBAT S&T VEHICLE MODELING & SIMULATION BASED DESIGN (D&I) BATTLEFIELD POWER GENERATION (FNC) ELECTRONICALLY CONTROLLED ACTIVE SUSPENSION (D&I) ADVANCED LEAD-ACID BATTERY (Plus-Up) FUTURE TACTICAL TRUCK SYSTEM ACTD (D&I) EXTREME TERRAIN MEDEVAC VEHICLE (Plus-Up) EFV OBSTACLE DETECTION SYSTEM (FNC)

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The Ultimate Customer – The Warfighter!

Caveat: Real Customer: SYSCOMs, PEOs, DRPMs

HOT Buttons:

1. Survivability
2. Reduce Combat Load
3. Small Unit Excellence
4. Fuel Efficiency
5. Light weight portable power sources
6. "Transparent Urban Structures
7. Modular, Scaleable Weapons
8. CIED, MCM, CRAM

QUESTIONS?

http://www.onr.navy.mil/sci_tech/30/

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